

# JOINT TEST & EVALUATION

## Overview

The Joint Test and Evaluation (JT&E) Program has existed for 30 years and is designed to provide quantitative information for analysis of joint military capabilities and potential options for increasing military effectiveness. The program is complimentary to, but not a part of, the weapons acquisition process. A JT&E test brings together two or more military departments or other components to:

- Assess the interoperability of Service systems in joint operations.
- Evaluate improvements in joint technical and operational concepts.
- Evaluate and validate multi-Service testing methodologies.
- Assess performance of interacting systems under realistic joint operational conditions.
- Provide data from joint field tests and exercises to validate models, simulations, and test beds.

Effective December 9, 2002, DOT&E received responsibility for supervision of the JT&E program. DOT&E is changing the JT&E process to provide results to the warfighter faster. The program will be more agile and respond more quickly to emergent needs and requirements. JT&E will streamline the process and accelerate testing. Improved implementation will provide immediate benefits. Quick Reaction Tests (QRTs) will complement ongoing tests, providing testing and reporting of results in six months or less. OSD directed the first QRT, Joint Survivability (JSURV), in August 2003 to identify systemic deficiencies in tactics, techniques, and procedures (TTP) and materiel used by U.S. forces in Iraq in order to reduce U.S. casualties. JT&E is accelerating testing and shortening test duration. This year, OSD chartered Joint Datalink Information Combat Execution (JDICE) six months early, and testing will take place within the first year of charter. In an effort to implement products early and responsively to its customers, Joint Methodology to assess Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Architecture (JMACA) is integrating with its U.S. Joint Forces Command (JFCOM) customer now, during testing, in order to provide interim test results quickly and support an early and smooth transition of test results and products. The JT&E program identifies realistic, cost-effective, Service-executable solutions to the joint problems facing today's warfighter.

The following JT&E tests participated or contributed this year in Operation Iraqi Freedom (OIF). They applied results from their tests to make real-time improvements to operations.

- Joint Global Positioning System Combat Effectiveness (JGPSCE) field testing discovered potential weapon systems vulnerabilities to global positioning system degradation. The quick-look test results concerning these vulnerabilities provided invaluable and timely information to warfighters during Operation Iraqi Freedom.
- Joint Unmanned Air Vehicles (JUAV) deployed into the U.S. Central Command (CENTCOM) Air Operations Center to assist in unmanned aerial vehicle tactics, techniques, and procedures development.
- Joint Cruise Missile Defense (JCMD) provided hardware and software tools for quick assessment of events from Iraqi missile shots.
- Joint Logistics/Planning Enhancement (JLOG/PE) assisted and is currently working with the CENTCOM J4 staff in improving the process of acquiring and assimilating logistics support.
- Joint Command, Control, Intelligence, Surveillance, and Reconnaissance (JC2ISR) deployed to assist in all phases of time-sensitive targeting.
- Joint Battle Damage Assessment (JBDA) provided four enhancements for implementation to the BDA process during OIF.

In addition, Joint Shipboard Helicopter Integration Process (JSHIP) directly supported Army, Navy, and Air Force warfighters participating in Operation Enduring Freedom (OEF). A cadre of JSHIP members provided products and assistance to the *USS Kitty Hawk* (CTF70) that enabled embarked special operations personnel and aircrews to meld their capabilities with the ship's crew to employ the aircraft carrier as an Afloat Forward Staging Base. During FY03, the JT&E program selected three planning-phase candidates (from 12 submitted) that will be considered for charter in January 2004.

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- Joint Urban Fires and Effects will increase the ability of the Joint Force Commander (JFC) to conduct urban fires (lethal, non lethal, other) and assess effects relative to the desired operational effect.
- Joint Space Control Operation will make the JFC's combat planning and execution more lethal through improved command and control (C2) and space control negation joint tactics, techniques, and procedures (JTTPs).
- Joint Integration and Interoperability of Special Operations will focus on improving the joint planning, rehearsal, and execution within the unique special operations mission areas of direct action and special reconnaissance to ensure enhanced integration, interoperability, and collaboration with special operations forces.

A JT&E senior-level board will convene in January 2004 to decide which of these proposed tests will be chartered and proceed to testing. As part of the re-engineering effort, the evaluation periods for these three were shortened by six months to ensure prompt attention to their issues.

The following pages provide additional information on current JT&E test activities and the products they are providing to the warfighter.

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## Joint Battle Damage Assessment (JBDA)

**J**oint Battle Damage Assessment (JBDA) is a four-year JT&E chartered in August 2000 to study and enhance the joint force battle damage assessment (BDA) process. During Operation Desert Storm, joint force BDA requirements exceeded the available intelligence collection capabilities. The DoD Final Report to Congress, Conduct of the Persian Gulf War, 1992, stated, “The BDA process was difficult, especially for re-strike decisions.” The report recommended the establishment of effective BDA doctrine and organization, and it identified a critical need to develop a BDA process for maneuver forces. A lack of trained BDA analysts exacerbated the situation.

Operations Desert Fox and Allied Force revealed that, while some advances had been made in BDA since Operation Desert Storm, the need remained for further improvement. The training for BDA analysts was still lacking, and the processes and procedures for conducting both fixed and mobile target BDA needed revisions to promote more timely and accurate BDA to meet the commander’s decision cycle.

OSD directed the JBDA Joint Feasibility Study (JFS) in FY99 to address these recurring shortcomings. The Army was designated as the lead Service and the Army Intelligence Center and School is the sponsoring command. OSD chartered JBDA as a JT&E in FY00.

### TEST AND EVALUATION ACTIVITY

During FY03, JBDA established the baseline joint BDA process by analyzing the data and anecdotal observations gathered during the U.S. Forces, Korea (USFK) exercise Ulchi Focus Lens 2002. JBDA completed the baseline data analysis and then developed and fielded doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLP-F) test products that address the problems identified in the baseline BDA process. JBDA evaluated the DOTMLP-F test products in exercise Ulchi Focus Lens 2003. During FY04, JBDA will analyze this data and issue the final joint test report.

During Operation Enduring Freedom and Operation Iraqi Freedom, JBDA deployed observers to the Headquarters, U.S. Central Command, in Tampa, Florida, and the National Military Joint Intelligence Center at the Pentagon in Washington, D.C., to observe the as-is BDA process. JBDA rotated observers after several weeks to ensure continued presence at both locations throughout the sustained operations. These observations served to reinforce the findings of the baseline joint BDA process and focus the development of DOTMLP-F products for deployment with USFK.

From January to July 2003, JBDA also supported the Joint Task Force - Horn of Africa with an intelligence officer in sustained operations to promote political stability in the region, deny safe haven to terrorists, and provide valuable insight on BDA in counter-terrorist operations.

### TEST AND EVALUATION ASSESSMENT

JBDA will facilitate operational decision making for the JFC by improving the accuracy and timeliness of BDA. JBDA is developing and testing procedures to improve the accuracy and timeliness of BDA support at key points in the JFC’s decision-making cycle. JBDA’s focus is BDA reporting. After evaluating BDA processes, procedures, training, manpower, and command and control system interoperability, JBDA will develop and test proposed fixes and report them to combatant commanders and the Services. JBDA will provide the warfighter with C4I enhancements



*The Joint Battle Damage Assessment is developing and testing procedures to improve the accuracy and timeliness of battle damage assessment support at key points in the JFC’s decision-making cycle.*

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institutionalized in the USFK Advanced Deep Operations Coordination System. The USFK Joint BDA Guide (developed by JBDA) will be rewritten as the Commander's Handbook for Joint BDA and posted on the Joint Electronic Library. Additionally, JBDA will send BDA training CDs to the combatant commands for use in training permanent and augmentation BDA analysts.

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## Joint Command and Control, Intelligence, Surveillance, and Reconnaissance (JC2ISR)

The JC2ISR JT&E was chartered to improve joint operations by providing recommendations to enhance joint C2ISR tactics, techniques, and procedures (TTP); operational concepts; training; and systems. JC2ISR will enhance joint warfighter ability to utilize diverse national, theater, and tactical collection sensors and dynamically focus them to identify, locate, track, and engage high-value, mobile surface targets. Recommendations resulting from the JC2ISR JT&E will significantly improve the JFC's ability to integrate assigned organic and higher echelon platforms and sensors in a coordinated (cross-cued) and cooperative (simultaneous) collection strategy. Results will provide decision-makers with significantly improved C2ISR tasking, processing, exploitation, and dissemination (TPED) to support time-critical targeting, and will be applicable to all joint warfighters.

The Joint Task Force (JTF) and supporting components' ability to manage resources to detect, identify, locate, track, and engage high-value mobile surface targets is limited by current joint C2ISR processes. Recent military operations (Operations Desert Storm, Desert Fox, Allied Force, Enduring Freedom, and Iraqi Freedom) confirm our inability to employ ISR collection assets to consistently locate, identify, and attack fleeting mobile targets. In many cases, enemy mobile targets are vulnerable for a shorter period of time than it takes to engage them using current procedures. A major contributor to this limitation lies in shortfalls in the joint C2ISR TPED system that supports dynamic time-sensitive targeting (TST) operations. Lessons learned from these military operations have identified a requirement for highly discriminate targeting information that avoids collateral or unintended damage despite poor weather and adversary countermeasures.

OSD chartered the JC2ISR JT&E in FY00 to employ multi-Service and other DoD Agency support, personnel, and equipment to investigate, evaluate, and make recommendations to improve the operational effectiveness of joint C2ISR. Specifically, the JC2ISR JT&E will test and evaluate the JTF and Components' ability to dynamically task and re-task ISR collection platforms and sensors, and their ability to process, exploit, and disseminate combat information to support TST. The JC2ISR JT&E will baseline current C2ISR processes used to prosecute TSTs; identify ISR platform and sensor tasking, processing, exploitation, and dissemination deficiencies; and identify opportunities for joint C2ISR improvements.

JC2ISR executed its first mini-test during JTF Exercise 01-3, conducted August 6-19, 2001. During Mini-Test 1, JC2ISR assisted Second Fleet personnel with the development of the Time Critical Strike Tactical Memorandum.

### TEST & EVALUATION ACTIVITY

During FY03, the JC2ISR JT&E conducted and published test reports for Mini-Test 2 and for the first of two major field tests. The JC2ISR JT&E conducted Mini-Test 2 during the JTF Exercise 03-1 training exercise, October 28-November 6, 2002. JTF Exercise 03-1 was a Chairman, Joint Chiefs of Staff-approved, U.S. Joint Forces Command (JFCOM) scheduled, combined and joint field training exercise employing Army, Navy, Marine Corps, Air Force, Special Operations Forces (SOF), and NATO forces in a littoral environment. Field Test 1 employed Army, Navy, Air Force, SOF, and allied forces in a littoral environment in conjunction with the Joint Combat Identification Evaluation Team (JCIET) 2002 exercise in April 2002. The JC2ISR JT&E used Mini-Test 2 and Field Test 1 results primarily to define the joint C2ISR baseline, recommend improvements, and identify enhancements to improve joint C2ISR TPED/Task Process Post Use (TPPU) capabilities against TSTs during Field Test 2, to be conducted in conjunction with Combined JTF Exercise 04-2 in June 2004.



*The Joint Command and Control, Intelligence, Surveillance and Reconnaissance Joint Test and Evaluation conducted Mini-Test 2 during the JTF Exercise 03-1 training exercise, October 28-November 6, 2002.*

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Combined JTF Exercise 04-2 will employ Army, Navy, Air Force, SOF, and allied forces in a littoral environment in a joint field training exercise. JFCOM has identified the JC2ISR JT&E as the office of primary responsibility for TST data collection, analysis, and reporting for Combined JTF Exercise 04-2 requiring multi-Service and Agency coordination. FT2 will incorporate Distributed Common Ground/Surface System (DCGS) Family of Systems (FOS) representatives to see if an interoperable and integrated DCGS FOS can enhance TST operations. JC2ISR is striving to incorporate intelligence processes training to ensure a viable test architecture to conduct joint TPED/TPPU.

The JC2ISR JT&E supported other test events in FY03 with subject matter experts, data collectors, and software; using these events as risk reduction exercises to collect systems sample data and observe select TST activities to support JC2ISR Field Test 2 test requirements. Risk reduction exercises included JCIET Exercise 2003 in August 2003 and the JGPSCE JT&E mini-test in September 2003.

The JC2ISR JT&E also deployed several personnel in direct support of Operation Iraqi Freedom: four to the U.S. Central Command Joint Intelligence Center at MacDill Air Force Base, Florida; one as a member of the Predator unmanned aerial vehicle exploitation team at Beale Air Force Base, California; two to U.S. Army, Central Command, Riyadh, Saudi Arabia; and one to Central Command Air Forces Prince Sultan Air Base, Saudi Arabia.

In addition, the JC2ISR JT&E continued active participation in the Air Land Sea Application Center effort to draft TST multi-Service TTP documents.

## TEST & EVALUATION ASSESSMENT

JC2ISR JT&E results will support the development of numerous products for the Joint Staff, combatant commands, Services, national agencies, and other JT&E efforts. For example, JC2ISR results prompted the JT&E to develop an ISR/TST operations integration process model as a tool to effectively evaluate joint C2ISR improvements in TST prosecution. In general, JC2ISR test products will provide warfighters with a baseline effectiveness evaluation of current C2ISR capabilities and limitations, and will quantify the effects of specific C2ISR enhancements to improve the TST mission area. The Services and combatant commanders continue to support the JT&E. Resources and planning are on track to successfully complete scheduled testing.

JC2ISR will improve the operational capability of warfighters to employ joint ISR collection assets to conduct time-sensitive targeting. The JC2ISR JT&E is developing products that will enable warfighters to more effectively attack TSTs by improving their use of C2ISR equipment, their joint TTP, and their collection management training.



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## Joint Cruise Missile Defense (JCMD)

The Joint Cruise Missile Defense (JCMD) JT&E was chartered to employ multi-Service and other DoD agency support, personnel, and equipment to investigate and evaluate the operational effectiveness of joint operations against land attack cruise missiles (LACMs).

JCMD will provide crucial information on near-term LACM defense capabilities and inputs to support future architecture, technologies, and operational concepts. The basic JCMD test approach integrates a series of field tests and simulations in three phases to answer the program issues. Phase 0 was the risk-reduction effort and ensured the program was prepared to collect and assess the Joint Integrated Air Defense System (JIADS) LACM capabilities. Phase 1 was focused on assessing the JIADS current (FY02) capabilities identifying potential problem areas and enhancements. Phase 2 will evaluate the value of identified enhancements and provide the combatant commanders with both an assessment of the near-term (FY04) capabilities as well as recommendations for further areas of improvement.

### TEST & EVALUATION ACTIVITY

JCMD Phase 1 activities took place in FY02. Field Test 1 occurred as part of the U.S. Joint Forces Command (JFCOM) Joint Combat Identification Evaluation Team event April 8-26, 2002, in Gulfport, Mississippi. Field Test 1 assessed the current JIADS cruise missile defense capability in a live test environment using operational forces and an operationally representative scenario. JCMD flew BQM-74E (unmanned drones) and BD-5J (manned micro jets) to represent the current land attack cruise missile threat. More than 25 sorties were flown over land and sea, simulating surface and air launched land attack cruise missile profiles.

JCMD's second Phase 1 test in FY02 was a simulation evaluation of the JIADS. JCMD executed Simulation Test 1 from September 9-20, 2002, at the Boeing Virtual Warfare Center, St. Louis, Missouri, and the Aegis Training and Readiness Center, Dahlgren, Virginia. Operator-in-the-Loop systems in the evaluation included the Joint Air Operations Center, Tactical Air Operations Center, Patriot, Airborne Warning and Control System, F-15C, Air Battle Management Operations Center, and Aegis Command Information Center.

The JCMD team is currently planning Phase 2 of its integrated test schedule, the enhanced JIADS capability assessment. JCMD's enhanced phase of testing begins with Simulation Test 2, followed by Field Test 2 to be conducted in conjunction with Combined JTF Exercise 04-2. Simulation Test 2 requires extensive integration testing of the widely distributed simulation architecture JCMD is developing. This architecture provides a foundation for many follow-on customers including Service and Joint organizations. The Simulation Test 2 Mid-Planning Conference, held September 8-19, 2003, also provided the setting for a General Officer Steering Committee (GOSC) meeting and gave the GOSC members the opportunity to view the extensive simulation capability, receive an update of JCMD activities, and gain an understanding of open issues such as simulation operator manning requirements. Field Test 2 will be supplemented by specific system tests to ensure a comprehensive assessment of JIADS capability is accomplished.

The program is also continuing its efforts to support other non-dedicated test events and continue to develop Warfighter support products that will meet future training, testing, and experimentation requirements. JCMD is preparing to support the JFCOM and First Air Force Area Cruise Missile Defense System Military Utility Assessment of the Joint Based Expeditionary Connectivity Center. JCMD conducted this test in August 2003 in Oceana, Virginia. This event included the debut of the upgraded Small Manned Aerial Radar Target-Model 1 (SMART-1), a new cruise missile surrogate. The SMART-1 is now equipped with a sophisticated flight following system that allows for low-level night flight profiles with improved communications and flight characteristics.



*Joint Cruise Missile Defense will enhance the capability of U.S. Joint Integrated Air Defense System to defeat a cruise missile attack.*

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## TEST & EVALUATION ASSESSMENT

JCMD will enhance the capability of U.S. JIADS to defeat a cruise missile attack. After evaluating baseline JIADS capabilities and procedures to meet cruise missile defense mission area requirements, JCMD will quantify the effects of procedural and hardware enhancements to JIADS in a cruise missile defense role and make recommendations to combatant commanders and the Services. JCMD products will provide warfighters with a baseline effectiveness evaluation of current JIADS capabilities and procedures to meet the requirements of the JCMD mission area. Once this has been accomplished, the JCMD JT&E will report the effects of concept of operations and TTP changes as well as command and control, sensor, and shooter system enhancements to the JIADS in a cruise missile defense role.



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## Joint Datalink Information Combat Execution (JDICE)

The Joint Datalink Information Combat Execution (JDICE) JT&E was chartered to improve the warfighter's battlespace situational awareness by developing, testing, evaluating, and institutionalizing joint tactics, techniques, and procedures (JTTPs) that provide critical mission information across multi-platform, fielded, tactical air and ground data links. The JT&E will specifically determine whether the expanded application of Link-16 will improve deconfliction and tactical targeting processes. JT&E will accomplish this end by employing multi-Service and other DoD Agency support, personnel, and equipment, which shall be completed by April 30, 2006. JDICE is committed to getting information to the warfighter as soon as possible, and test results will be disseminated as appropriate.

The Air Force Air Warfare Center nominated JDICE as a Joint Test, and OSD directed a JDICE Joint Feasibility Study (JFS) in September 2002. The JDICE JFS concluded that a JDICE JT&E was necessary and feasible. OSD chartered JDICE in April 2003. JDICE is the first effort to be chartered as a test case for shortening the timeline and delivering products to the warfighter under the DOT&E re-engineering effort for the JT&E program.

### TEST & EVALUATION ACTIVITY

The JDICE test concept is based on empirical testing during three live mini-tests and a field test using current joint warfighters, their fielded systems, and realistic targets. JDICE selected each mini-test arena as a direct result of Joint Warfighter Advisory Group inputs. They identified that the most important mini-test (Mini-Test A) as the Army Forces/Marine Forces. Simply stated, the objective of Mini-Test A is to provide a vehicle for data collection to supporting a filtered, single-source, best integrated ground picture for theater missile defense and close air support. Mini-Test A is planned to use the Joint National Training Capabilities (JNTC) venues.

JDICE identified the second mini-test (Mini-Test B) for Special Operations Forces (SOF). The objective of Mini-Test B is to protect Special Operation Forces (SOF) from fratricide while optimizing appropriate SOF-derived critical mission information to Link-16 players. Information sources are very different between the Mini-Tests A and B as is information flow and where relevant information stops.

JDICE has identified Mini-Test C as a National Assets venue, which was the first test conducted to flow directly into scheduled Navy and Air Force JTTP conferences covering Space, Command and Control (C2), and Fighter mission areas. The objective of Mini-Test C was to provide the best possible real-time threat picture to tactical level shooters. The desired outcome of Mini-Test C was to place actionable critical mission information on tactical level warfighting platform displays – information which currently exists at operational levels, but not at the tactical level. Mini-Test C was conducted at Nellis Air Force Base, Nevada, from October 27 - November 7, 2003. Immediate feedback from the JDICE JT&E was enable new and proven JTTPs to be rapidly disseminated to joint warfighters and the Services. In addition, operational constraints or limitations discovered during the JT&E will serve as a foundation to evolve the role of Link-16 in modern warfighting C2, and potentially influence ongoing and future machine-to-machine acquisition strategy.

The field test will provide a vehicle for data collection to determine if the simultaneous integration of information gathered from the three previous mini-tests provides an improvement in the tactical deconfliction and targeting processes, without saturating the Link 16 network architecture. The field test is planned to use a JNTC venue that provides the most realistic operational environment possible.



*The Joint Datalink Information Combat Execution test concept is based on empirical testing during three live mini-tests and a field test using current joint warfighters, their fielded systems, and realistic targets.*

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## TEST & EVALUATION ASSESSMENT

Based upon the emerging JDICE Mini-Test C results, the JT&E will rapidly develop, document, and disseminate conclusions and recommendations regarding enhancements to Joint Data Link architecture, associated JTTPs, concept of operations, and processes. Specific emphasis will be placed on the rapid production of a quick look report and the presentation of these results at Service-level tactics, techniques, and procedures conferences. The JT&E specifically addresses non-materiel solutions and the development of JTTPs to transfer critical, actionable information to the joint user. Test products will include the JTTPs to take correlated machine-to-machine nationally-collected data and use a man-to-machine interface to distribute specific actionable data via the Link 16 network to the tactical level shooter. When complete, JDICE will present solutions to documented shortfalls in tactical datalink information exchange capabilities across sensor, C2, and “shooter” datalink-capable networks.

## Joint Global Positioning System Combat Effectiveness (JGPSCE)

The JGPSCE JT&E was chartered to evaluate the impact of electronic warfare (EW) targeted against global positioning system (GPS) receivers in joint operations. GPS provides highly accurate, real time, passive, common-reference grid position and time information to military and civilian users worldwide. GPS enables the military forces to determine their position, velocity, and time. Knowledge of the exact position and time is essential to reconnaissance and intelligence missions. GPS will: enhance command and control and coordinate battle tactics and support; engage in strategic and tactical warfare; maneuver efficiently on the battlefield; provide accurate and timely fire support; and facilitate combat service support operations. OSD chartered JGPSCE in July 1999.

The JGPSCE JT&E is conducting field test events representing three types of combat operations: small scale contingency; limited engagement; and major theater war. Each field test addresses a specific combatant command's theater of interest using: current tactics, training, and procedures; approved doctrine; actual concepts of operation; and "real" scenarios and threat laydowns.

Each field test is designed to provide key information for warfighters to use in operational decision-making. The field tests employ open air GPS jamming representing the real-world threat to evaluate the impact of GPS EW and electromagnetic interference (EMI) by comparing baseline performance to performance with EW and EMI present. Mitigation techniques and procedures developed during test planning are also employed and evaluated during field testing to assess the ability of troops and commanders to continue operations in a GPS degraded or denied environment. JGPSCE publishes Quick Look Reports to the Services and the combatant commands immediately after each test event.

Phase 1 testing consisted of two live test events, GYPSY ALPHA and GYPSY BRAVO, at the tactical level of warfare. These tests focused on GPS EW and EMI vulnerabilities and mitigations for few-on-few engagements during small-scale contingencies. Each live test in Phase I concentrated on portions of the sensor-to-shooter architecture. The GYPSY ALPHA field test, October and November 2000, exercised ground forces supplemented by limited airborne forces. The GYPSY BRAVO field test was executed in two parts, January 2002 and July 2002, exercising airborne platforms delivering precision guided munitions.

Phase 2 testing consisted of one live test event, GYPSY CHARLIE, to evaluate the tactical and operational-level mission performance of integrated system-of-systems during limited engagement operations.

Phase 3 testing consists of a single test, GYPSY DELTA, which will evaluate integrated tactical- and operational-level systems with warfighters performing missions during a major theater of war scenario.

### TEST & EVALUATION ACTIVITY

JGPSCE completed the GYPSY CHARLIE field test in FY03, began planning for GYPSY DELTA, and conducted numerous briefings and presentations.

- JGPSCE briefed the GYPSY BRAVO results to Deputy Secretary of Defense, the Chairman and Joint Chiefs, the Service Operations Deputies, three combatant commands, the Secretary of the Air Force, Under Secretary of Defense(Acquisition, Technology, & Logistics), and DOT&E. These briefings increased awareness of systems vulnerability to GPS degradation.



*Global Positioning Systems Combat Effectiveness executed the GYPSY CHARLIE field test at Nellis Air Force Base, Nevada, in September 2003. GYPSY CHARLIE consisted of over 450 participants from 25 units, flying 240 sorties over ten nights.*

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- JGPSCE published GYPSY BRAVO Quick Look Reports as well as vulnerability assessment reports for each system executed in the GYPSY BRAVO field test.
- JGPSCE executed the GYPSY CHARLIE field test at Nellis Air Force Base, Nevada, in September 2003. GYPSY CHARLIE consisted of over 450 participants from 25 units, flying 240 sorties over ten nights. GYPSY CHARLIE included six adjunct test activities including two aircraft from the Federal Aviation Administration flying 16 sorties.
- JGPSCE completed work on its GPS Vulnerability Test Methodology. The execution of the GYPSY CHARLIE field test validated the JGPSCE developed methodology.

The JGPSCE Joint Test Team received the Joint Meritorious Unit Award on August 1, 2003, for its contribution to Operation Iraqi Freedom.

## TEST & EVALUATION ASSESSMENT

JGPSCE continues to provide rapid feedback to the warfighter community through quick-look reports and briefings. The GYPSY BRAVO test results significantly enhanced vulnerability awareness with the DoD senior leadership. Central Command conducted additional training and briefed numerous deploying units, and the Navy circulated updates to operational crews. The Air Force dedicated resources to conduct additional testing, correct system vulnerabilities, and provide enhanced crew awareness. When complete, JGPSCE will have quantitatively and qualitatively measured and assessed the impacts of the loss of GPS on joint operations, measured and assessed mitigation methods to limit mission impacts, and developed test methodologies to characterize GPS vulnerabilities in future acquisition and integration programs.

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## Joint Logistics Planning Enhancements (JLOG/PE)

The JLOG/PE JT was chartered to identify and develop enhancements to joint logistic sustainment planning and management processes. Recent operations, such as Operation Iraqi Freedom, as well as joint exercises, have demonstrated the need for improvements in both the exchange of logistics information between the Service components and the JFC, and in the joint logistics planning and management processes to aid the JFC J4 assessment of the sustainment of in-theater forces. Taken together, these define a requirement for more timely and accurate logistics information.

The Developmental Test Command of the Army Test and Evaluation Command (ATEC) developed a JT&E nomination called Joint Versatile Information System On-line. OSD directed this nomination as a Joint Feasibility Study, and the name was subsequently changed to Joint Logistics Planning Enhancements (JLOG/PE) to better communicate the functional focus of this test.

### TEST & EVALUATION ACTIVITY

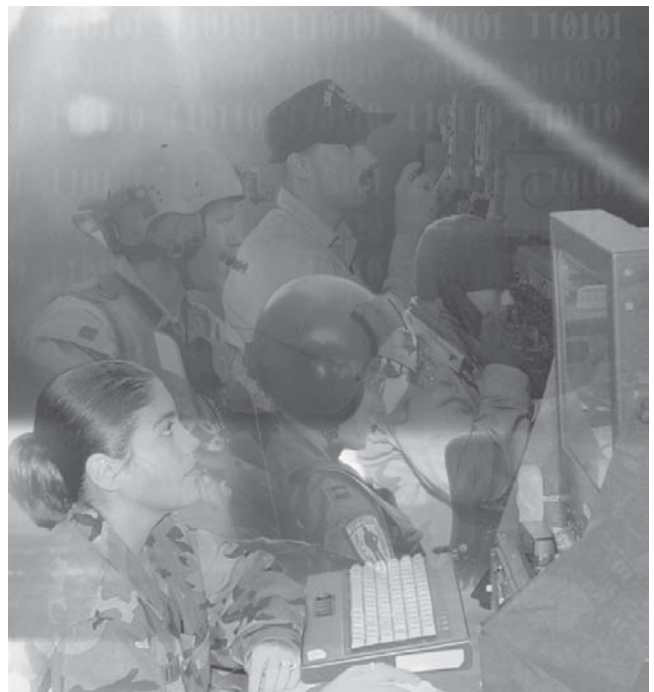
During FY02–03, JLOG/PE conducted program-level test planning, held planning conferences, and prepared for its first test activity, Test A.1, in September 2003.

The JLOG/PE Joint Warfighter Advisory Group Conference, March 25-26, 2003, brought representatives from a wide range of joint and Service testing activities. Members of the JLOG/PE JT&E provided an overview of the JLOG/PE JT&E test strategy and also presented a briefing on joint logistics sustainment planning and management processes and on process mapping efforts. They also reviewed, in detail, the JLOG/PE T&E concept.

The JLOG/PE Technical Advisory Group (TAG) met June 24-25, 2003, with the purpose of soliciting Service input on the JLOG/PE test concept and test planning activities. The TAG included representatives from Air Force Operational Test and Evaluation Center, ATEC, Joint Interoperability Test Command, Marine Corps Operational Test and Evaluation Activity, and Navy Operational Test and Evaluation Force.

The JLOG/PE Risk Reduction Event conducted July 7-11, 2003, at the Joint Warfighting Center, Suffolk, Virginia, demonstrated that the data required for the JLOG/PE test strategy can be collected. The Risk Reduction Event was conducted in conjunction with the Unified Endeavor 03-2 Database Test 3. Its focus was to confirm JLOG/PE's ability to capture the data necessary to enable reconstruction and replay of key portions of the joint exercise for use during subsequent testing. The Risk Reduction Event followed the same general outline as actual test execution, but employed a narrower focus in that only data aimed at enabling reconstruction and replay was collected. Data was collected using a combination of manual and automated means. The Joint Theater Level Simulation (JTLS) startex database, JTLS checkpoint files, Global Command and Control System reconstruction data, screen captures, and e-mail traffic were collected.

Following data collection at the database test, JLOG/PE returned to home station and reconstructed (for playback) a selected portion of the database test in the JLOG/PE analysis lab. Successful accomplishment of this task validated JLOG/PE's ability to execute a complete and successful test during and following a joint exercise.



*Joint Logistics Planning Enhancements testing will assess current joint logistics sustainment planning and management processes, identify deficiencies, develop enhancements to correct the deficiencies, test the enhancements, and report the results.*

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The JLOG/PE JT&E has prepared a plan to ensure that its evaluation results are released as interim reports to the warfighters as early as practical. The JLOG/PE Test Product Implementation Plan details the strategy for test product release and follow-through to the end user.

## **TEST & EVALUATION ASSESSMENT**

JLOG/PE testing will assess current joint logistics sustainment planning and management processes, identify deficiencies, develop enhancements to correct the deficiencies, test the enhancements, and report the results. These joint logistics sustainment planning and management process enhancements will improve warfighter capabilities. Results will manifest themselves in more agile forces that are able to proactively assess operational logistics requirements; improved preparedness of units being committed to operations; faster, more informed decisions; improved measurements of success; accelerated operational timetables; reduced risk; and the projection of more capable forces requiring fewer resources. The JLOG/PE JT&E will provide that level of utility in terms of process, best practices, analysis, and understanding as usable test products.



## Joint Methodology to Assess C4ISR Architecture (JMACA)

The JMACA JT&E was chartered to provide tools to identify and reduce the problems resulting from lack of information about the interoperability characteristics of Joint Task Force (JTF) Command, Control, Communications, and Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) architectures. Unknown interoperability deficiencies can affect the internal operations of the JTF with reduced speed of command, security vulnerabilities, unplanned resource expenditures due to the need for troubleshooting and reconfiguration, an excessive logistics train, and deployment of redundant systems. These unknown interoperability deficiencies can also affect the mission accomplishment of the JTF by causing a reactive posture, force loss, reduction of operating tempo, and loss of windows of opportunity.

The Navy and U.S. Joint Forces Command (JFCOM) nominated Joint C4ISR Outcome-Based Integrated Architecture Assessment (JCOBIAA) as a Joint Feasibility Study (JFS) to address these problems, and OSD directed a JCOBIAA JFS in July 2000. The JCOBIAA JFS team concluded that a JCOBIAA JT&E was both necessary and feasible. OSD chartered a JT&E in October 2001 and renamed the program Joint Methodology to Assess C4ISR Architecture (JMACA). The Navy is the lead Service. The JMACA JT&E will conclude in June 2006.

The JMACA JT&E problem statement reads: “The JTF commander has insufficient means to rapidly identify deficiencies and solutions within the C4ISR architecture.” The purpose of the JMACA JT&E is to enhance and validate an integrated C4ISR architecture assessment methodology, known as the JMACA Methodology. JMACA will test the JMACA Methodology utilizing JTF C4ISR architectures derived from a series of scheduled events, escalating in realism and complexity.

### TEST & EVALUATION ACTIVITY

During FY03, JMACA planned, conducted, and reported on a mini-test and on JMACA Methodology Validation Test 1.

JMACA conducted a two-phase mini-test from December 2-13, 2002.

**Phase 1.** December 2-6, 2002, JMACA JT&E Tools Lab, Suffolk, Virginia. The JMACA test team evaluated the JMACA Methodology analytical toolset by employing the sequential steps of the JMACA Methodology to evaluate a JTF architecture scaled to a combat search and rescue scenario. This phase demonstrated the Architecture Identification (Step 0), Data Mining (Step 1), Risk Assessment (Step 2), and Fine-Grain Analysis (Step 3) steps of the JMACA Methodology.

**Phase 2.** December 9-13, 2002, Space and Naval Warfare Systems System Center, Charleston, South Carolina; Communications Electronics Command (CECOM), Fort Monmouth, New Jersey; and Electronic Systems Center, Hanscom Air Force Base, Massachusetts. JMACA conducted a distributed testbed demonstration using five notional connectivity capabilities of the selected testbed venues to perform the End-to-End Testing (Step 4) of the JMACA Methodology. JMACA conducted an additional testbed connectivity excursion between Tactical Training Group, Atlantic and CECOM on January 9, 2003.



*The Joint Methodology to Assess C4ISR Architecture test team evaluated the JMACA Methodology analytical tool set by employing the sequential steps of the JMACA Methodology to evaluate a Joint Task Force architecture scaled to a combat search and rescue scenario.*

# JOINT TEST & EVALUATION

JMACA conducted Validation Test 1 from August 18, to September 26, 2003, in two phases.

**Phase 1.** August 18-27, 2003, JMACA JT&E Tools Lab, Suffolk, Virginia. Trained Service representatives evaluated the JMACA Methodology analytical toolset by employing its sequential steps to evaluate a C4ISR architecture utilized during Operation Iraqi Freedom. This phase exercised the Architecture Identification (Step 0), Data Mining (Step 1), Risk Assessment (Step 2), Fine-Grain Analysis (Step 3), and Operational Analysis (Step 5) steps of the JMACA Methodology.

**Phase 2.** September 15-26, 2003, Joint Interoperability Test Command, Fort Huachuca, Arizona. JMACA exercised End-to-End Testing (Step 4) using select equipment strings identified by the JMACA Methodology during Phase 1.

## TEST & EVALUATION ASSESSMENT

JMACA successfully accomplished the primary objectives of its mini-test and compiled and detailed the analysis and results in the JMACA Mini-Test Lessons Learned Report. These accomplishments include:

- Rehearsal of the Architecture Identification (Step 0), Data Mining (Step 1), Risk Assessment (Step 2), and Fine-Grain Analysis (Step 3) steps of the JMACA Methodology using a mission-specific JTF C4ISR architecture.
- Demonstration of distributed testbed connectivity, with test design, configuration, and execution performing collaboratively between multiple supporting testbed facilities.
- Rehearsal of functional thread testing (including instrumentation and data collection) to evaluate and refine, as necessary, JMACA test data collection techniques and methods. The specific areas that JMACA addressed include manual data collection techniques, automated data collection techniques, accuracy of collected data, and sufficiency of collected data.
- Rehearsal of the End-to-End Testing (Step 4) step of the JMACA Methodology.

The primary objective of Validation Test 1 was to facilitate the collection of data necessary to answer Test Issue 1, “How well does the JMACA Methodology support the assessment of a JTF C4ISR architecture?” Based on preliminary analysis and observations, this objective was successfully accomplished. The JMACA Validation Test 1 Quicklook Report outlines these findings. Detailed test results, data, and analysis of both primary and secondary objectives may be found in the Validation Test 1 Activity Report, due for release in December 2003.

The JMACA JT&E has begun transition of the JMACA Methodology and associated processes, analysis procedures, and key personnel into the JFCOM Joint Battle Management Command and Control (JBMC2) Systems Engineering Division. This transition enhances the JBMC2 Systems Engineering Division’s ability to support JFCOM’s responsibilities as directed by Management Initiative Directive 912, and lays the groundwork for an early and efficient transition of JMACA JT&E results to the warfighter. A transition plan and memorandum of agreement between JMACA and JBMC2 are currently under development.

When complete, JMACA will provide tools to assist warfighters in making informed decisions about C4ISR architecture capabilities when organizing a JTF. JMACA will provide the JFC with a set of tools to assess the JTF integrated C4ISR architecture. These tools, designated as the JMACA Methodology, will be timely, supportable, adaptable, and easily integrated.

# JOINT TEST & EVALUATION

## Joint Shipboard Helicopter Integration Process (JSHIP)

The JSHIP JT&E was chartered to develop and facilitate a process to integrate multi-Service rotorcraft, aircrews, and embarked units with aviation-capable Navy ships. JSHIP conducted flight tests, critical measurements, engineering analyses, and simulations to provide recommended changes to joint tactics, techniques, and procedures; training syllabi; and rotorcraft/ship designs that will enhance safe, rotorcraft/ship interoperability. Army, Air Force, and Special Operations Forces helicopters were the primary focus for testing, however, National Guard assets were available and used for some at-sea testing. The test products delivered by the JSHIP program have already proven indispensable to the warfighters and were routinely used during recent operations in Afghanistan and Iraq.

OSD chartered the JSHIP JT&E in July 1998 following the completion and acceptance of a Joint Feasibility Study directed in June 1997. All Services and combatant commands were designated as participants, with the Navy as the lead service and executive agent for the program. JSHIP conducted 11 separate Dedicated at Sea Tests, testing seven classes of ships (CV, CVN, LHA, LHD, LSD, LPD, FFG) and eight Models of Aircraft (AH-64A/D, U/MH-60A/L, A/MH-6J, CH-47D, MH-53J, HH-60G, OH-58D, S/HH-60F/H) in a specific set of combinations. These tests spanned 64 steaming days and approximately 1200 flight hours. JSHIP also lead the development and verification of the Dynamic Interface Modeling and Simulation System (DIMSS). DIMSS was a joint development with the NASA Ames Vertical Motion Simulator group to perfect a simulation for use as an engineering tool for safely developing and expanding helicopter launch and recovery wind-over-deck (WOD) flight envelopes aboard Navy ships.

### TEST & EVALUATION ACTIVITY

In addition to providing ongoing and continuing support to warfighters involved in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), JSHIP continued to create new test products and improve those already fielded. Highlights of previous testing included:

- A JSHIP cadre provided products and assistance to the *USS Kitty Hawk* (CTF70) that enabled embarked special operations personnel and aircrews to employ the aircraft carrier as an Afloat Forward Staging Base during OEF.
- JSHIP personnel deployed to the European Command Area of Responsibility to assist Army, Europe aviation units in creating a Maritime Interdiction Operations capability to train to operational standards for OEF.
- JSHIP evaluated multi-aircraft operations onboard the *USS Cleveland* (LPD 7), including AH-64A Apache, CH-47D Chinook, and UH-60L Blackhawk helicopters. This test expanded helicopter launch and recovery WOD flight envelopes, and addressed compatibility, procedures, and training issues.
- JSHIP evaluated multi-aircraft operations aboard the *USS Peleliu* (LHA 5). Army and Air Force test assets included OH-58D, UH-60L, CH-47D, AH-64D and HH-60G helicopters. This test addressed ordnance and helicopter WOD envelope expansion, as well as compatibility, procedures, and training issues.
- JSHIP completed the first-ever H-60 similarity study, a total analysis of all DoD H-60 helicopters with regards to land-based and shipboard performance criteria. Following this study, the H-64 and H-47 similarity studies were also completed.
- JSHIP developed and obtained all-Service approval for a new Joint Deck Landing Qualification Memorandum of Understanding (MOU). This MOU was signed by the Army, Navy, and Air Force in January, 2002.



*Joint Shipboard Helicopter Integration Process has increased the joint operational flexibility and readiness*

# JOINT TEST & EVALUATION

## TEST & EVALUATION ASSESSMENT

JSHIP testing has made contributions to warfighters in four categories.

- **General.** The Joint Shipboard Helicopter Integration Planning Guidance and Procedures Document was the main product developed for the warfighter, and it also benefits the testing and acquisition communities. It encompasses procedures, planning, tactics, techniques, test methods, and training. Additionally, JSHIP has developed an interactive web site and web-based CD reference and training program for embarked units and ship's company. JSHIP distributed the CD to combatant commands and aviation units that were selected for joint helicopter shipboard missions.
- **Procedures and Training.** JSHIP's test products include safety, training, and procedural guidance to enhance the warfighter's capabilities to conduct joint ship/helicopter operations. These test products include Pilot Deployment Handbooks, Embarked Unit and Ship's Company Deployment Planning Guides, Checklists, and Simulator Training Programs.
- **Compatibility.** Test products include development of an interactive Electromagnetic Vulnerability (EMV) database which allows the warfighter to assess the impact of EMV on joint operations, including restrictions to aircraft and ships. In addition, compatibility test products provide expanded WOD operational aircraft takeoff and recovery flight envelopes and tie-down and aircraft deck spotting guides for non-Navy helicopters.
- **DIMSS.** JSHIP used this modeling and simulation effort as both an engineering T&E tool and a training device. It supports at-sea helicopter flight testing with the potential to develop helicopter launch/recovery WOD envelopes via simulation. JSHIP incorporated DIMSS into flight trainers supporting the Army's 101<sup>st</sup> Airborne Division (Air Assault) at Ft. Campbell, Kentucky. Additionally, DIMSS has become a key element of the Army's UH-60 improvement program called Lift Shipboard Integration Program.

JSHIP has increased the joint operational flexibility and readiness of helicopters operating onboard Navy ships. JSHIP developed a process for certification and integration of Army and Air Force helicopters on-board Navy ships to assist JFCs in conducting effective, efficient, and safe joint shipboard operations.

# JOINT TEST & EVALUATION

## Joint Survivability Quick Reaction Test (JSURV QRT)

The Joint Survivability (JSURV) Quick Reaction Test (QRT) was directed by DOT&E to investigate possible causes of casualty-producing incidents sustained by U.S. forces occupying Iraq after Operation Iraqi Freedom (OIF). Once these causes are identified, JSURV will recommend improvements to tactics, techniques, and procedures (TTP) and materiel, then assist in fielding those recommendations to reduce U.S. casualties in the OIF theater of operations.

The casualties being suffered by U.S. forces occupying Iraq may be preventable and may indicate deficiencies in the protection offered by certain vehicles; deficiencies in TTP in the employment of equipment; or a combination of both. The JSURV QRT will be executed in four parallel, overlapping phases:

- **Phase One.** Data Gathering. JSURV will identify and characterize the circumstances of incidents in which personnel become casualties while in ground vehicles. The focus of this effort is on both friendly and enemy characteristics.
- **Phase Two.** Problem Definition. JSURV will assess the results of data gathering and subsequent analysis to identify doctrinal (i.e., TTP) and hardware shortcomings, then conduct trend analysis to identify systemic deficiencies. The end result will be a compilation of shortcomings — doctrinal, hardware, or a combination — against which mitigating solutions may be applied.
- **Phase Three.** Identify and Demonstrate Solutions. JSURV will identify proposed TTP and materiel solutions to mitigate the casualty-producing shortcomings. Depending upon the nature of the proposed solution, some “prove out” of individual solutions may be required to ensure the viability of proposed solutions before exporting them to the OIF theater of operations for implementation.
- **Phase Four.** Closedown. Following accomplishment of its assigned tasks, the JSURV QRT will close down or transition to continuing efforts, as directed.

### TEST AND EVALUATION ACTIVITY

**Phases One and Two, Data Gathering and Problem Definition.** JSURV has built a database to track OIF incidents related to the objectives of the QRT. The database is fed by U.S. Central Command (CENTCOM) Significant Activities (SIGACT) reports since May 1, 2003, and can be updated in real time. The information contained in the database will allow JSURV to make observations about enemy TTP and friendly vulnerabilities, and make recommendations for friendly TTP and materiel solutions.

- **CENTCOM Database.** On September 7, 2003, CENTCOM granted JSURV access to their SIGACT database which catalogues over 400 incidents related to the JSURV problem statement. JSURV has made a preliminary analysis of the incidents, developed trends for the attacks, and characterized the enemy TTP and operational profile in conjunction with the Army Training and Doctrine Command (TRADOC) G2 and the Department of the Army G2.
- **Coordination with Center for Army Lessons Learned (CALL).** On September 8, 2003, JSURV began coordination with CALL. JSURV has been invited to the CALL Initial Impressions Report Workshop scheduled for October 13-17, 2003. CALL teams that have recently returned from the OIF theater of operations will be debriefed, including a team that dealt specifically with the JSURV problem statement. This data will assist JSURV in developing and refining TTPs and identifying near-term materiel solutions.

### Phase Three, Identify and Demonstrate Solutions.

- **TTP Development.** Initial analysis has indicated the potential for improved TTP to mitigate enemy actions. CALL has agreed to let JSURV take the lead on developing a TTP to address the problem statement. Close coordination with CALL and the Services is under way, and an initial draft will be ready in December 2003.
- **Materiel solutions.** JSURV is working with Army Materiel Command; Army Research Lab; Army Research, Development, and Engineering Command; TRADOC Systems Manager for Tactical Wheeled Vehicles; and the Product Management Office - Tactical Vehicles to identify available short-term fixes for rapid fielding to the forces in Iraq. In October 2003, JSURV will conduct testing to analyze the ballistic protection provided by on-



## JOINT TEST & EVALUATION

hand kits with armored doors, undersides, and innovative rocket-propelled grenade (RPG)-catching screens for High Mobility Multipurpose Wheeled Vehicles and other light vehicles at Aberdeen Proving Ground, Maryland. JSURV attended the Technology Workshop for the Identification and Defeat of Improvised Explosive Devices at the Navy Explosive Ordnance Detachment - Technology Division in Indianhead, Maryland, and further expanded the JSURV technical assessments by identifying potential electronic warfare (EW) and electronic countermeasures (ECM) tools to support early detection or pre-detonation of threats. These EW and ECM tools are available from the Counter-Mine Division of the Army Communications-Electronics Command, the Directed Energy Directorate of the Air Force Research Lab, and the Naval Research Lab.

### **TEST AND EVALUATION ASSESSMENT**

JSURV is the first QRT under the DOT&E initiative to re-engineer JT&E processes for faster results to the warfighter. JSURV will use T&E methodology to identify systemic deficiencies in TTP and materiel used by U.S. forces in Iraq, then will identify improvements and assist in fielding those improvements to reduce U.S. casualties in the OIF theater of operations. JSURV is scheduled for completion in November 2003.



# JOINT TEST & EVALUATION

## Joint Unmanned Aerial Vehicle in Time-Sensitive Operations (JUAV-TSO)

The JUAV-TSO JT&E was chartered to employ multi-Service and other DoD Agency personnel, support, and equipment to develop and document joint tactics, techniques, and procedures (JTTPs) for current and proposed tactical unmanned aerial vehicles (UAVs). Previously, UAVs were primarily used for intelligence, surveillance, and reconnaissance missions. Conflicts such as Desert Storm in the Persian Gulf and Operations Allied Force in the Balkans, Enduring Freedom in Afghanistan, and Iraqi Freedom in Iraq have shown that the Services have expanded UAV use to include tactical employment during dynamic, time-sensitive operations.

OSD directed a U.S. Navy-nominated Joint Unmanned Aerial Vehicle in Time-Sensitive Operations (JUAV-TSO) Feasibility Study on July 11, 2000, to identify improvements to JTTPs for the employment of UAVs by joint warfighters performing time-sensitive missions. OSD chartered the JUAV-TSO JT&E in October 2001 with the Navy as the lead Service and the Army, Marine Corps, and Air Force as participating Services. JUAV testing employs fixed- and rotary-wing air interdiction, artillery fire support, close air support (CAS), and personnel recovery within three command and control (C2) architectures. These architectures place weapon engagement decisions at various C2 nodes throughout JUAV-planned test events. The JUAV JT&E completion date is September 2005.

### TEST & EVALUATION ACTIVITY

The JUAV JT&E conducted a virtual rehearsal, a mini-test, and one field test during FY03. The JT&E coordinated with U.S.-based organizations and developed a working relationship with international contacts to support test activities.

**Planning.** The JUAV Legacy Product Implementation and Transition Plan was completed and signed on December 6, 2002. The plan coordinates the transition of JUAV legacy products from JUAV custody to the most appropriate organizations.

- The JUAV Mini-Test Detailed Test Plan (DTP) was signed on May 30, 2003. The mini-test was conducted June 30 through July 2, 2003, and was effective, not only for collecting data on the close air support fire support mission area, but also for JUAV test team members to address issues related to a “full-scale” test transition.
- The JUAV Field Test 1 DTP was completed and signed on July 15, 2003. Field Test 1 was conducted August 6-14, 2003. It was held in conjunction with the Naval Surface and Air Warfare Center–sponsored Desert Rescue XI combat search and rescue (CSAR) training event. JUAV analysts collected, analyzed, and reported the CSAR mission area data from Field Test 1.
- On July 17, 2003, JUAV submitted the Outline Test Plan for Field Test 2 to the Army’s Test Schedule and Review Committee for review.

**Virtual Rehearsals.** Virtual Rehearsal 3, November 18-22, 2002, was conducted at the Integrated Battlespace Arena (IBAR), Naval Air Weapons Station China Lake, California. It consisted of simulated air interdiction and fire support (CAS and artillery) missions in preparation for the JUAV mini-test. JUAV test team members evaluated data collection for CAS and artillery fire support and furthered data collector training. Personal Digital Assistants were exercised and refined during data collection and proved to be a valuable tool for JUAV data collection for future test events. Virtual Rehearsal 3 was a multi-Service and multi-National rehearsal event with participants from the United Kingdom and Canada, as well as the Army, Navy, Air Force, and Marine Corps.



*Joint Unmanned Aerial Vehicle will improve the employment of unmanned aerial vehicles by warfighters performing time-sensitive air interdiction, fire support, and personnel recovery missions.*

# JOINT TEST & EVALUATION

**UAV Operations and Test Events.** JUAV military members deployed in FY03 to support Operation Iraqi Freedom. They gained valuable insights on current Service-specific UAV tactics, techniques, and procedures and presented their findings to the JUAV test team members upon their return. Their experiences significantly and positively impacted the JUAV testing process.

**FY03 Test Events.** The first event was the JUAV mini-test, June 30 -July 2, 2003, at Naval Air Station, Fallon, Nevada. The mini-test focused on the CAS fire support mission area. The test event was not only useful for CAS data collection, analyzing, and reporting, but also served as the catalyst for the “virtual rehearsal to live testing” transition. The second event was Field Test 1/Desert Rescue XI, August 6-14, 2003, at Naval Air Station Fallon. Field Test 1 involved all branches of Service. JUAV teamed with the Joint Unmanned Aerial Vehicle Experimentation Program (JUEP) from the United Kingdom. JUEP brought an “Eagle” UAV to participate in the test event. The test focused on the CSAR mission area.

Due to numerous real-world taskings, JUAV was unable to procure the use of a U.S. UAV for the JUAV mini-test and Field Test 1. However, JUAV contracted to use an Israeli-made Hermes 450 UAV for both tests, and JUEP brought the European Aeronautic Defense and Space Company Eagle UAV to support Field Test 1.

## TEST & EVALUATION ASSESSMENT

JUAV JT&E products completed during FY03 include the Virtual Rehearsal 3 Summary Report, JUAV Mini-Test Final Report, and JUAV Field Test 1 Quick-Look Report. A Joint Unmanned Air Vehicles Joint Test and Evaluation A Virtual Rehearsal paper was submitted to the American Institute of Aeronautics and Astronautics “Unmanned Unlimited” Systems, Technologies, and Operations-Aerospace, Land, and Sea Conference and Workshop Exhibit for publication and presentation at a date and location to be determined. Test products are also anticipated in many of the doctrine, organization, training, materiel, leadership, personnel, and facilities categories.

JUAV will improve the employment of unmanned aerial vehicles by warfighters performing time-sensitive air interdiction, fire support, and personnel recovery missions. When complete, JUAV will develop joint, platform-independent tactics, techniques, and procedures for UAV employment that move away from the Service-centric documents that are currently available. These tactics, techniques, and procedures will improve UAV employment in time-sensitive operations, with emphasis on air interdiction, fire support, and personnel recovery missions.